Computing and the Military

Military Computing: The Image

Military Computing: The Reality

Military Computing: The Image

Fail Safe (1964)
Military Computing: The Image (Cont’d)

Military Computing: The Image (Cont’d)

*Short Circuit* (1986)
Military Computing: The Image (Cont’d)

*WarGames* (1983)
Military Computing: The Reality

- Computing is just one of many technologies used by the military to support three key activities:
  1. Intelligence
  2. Defence
  3. Attack

- Development of electromechanical and electronic computers dramatically accelerated by World War II.

- Early uses of computing included artillery ballistics calculations, battlefield logistics and breaking cryptographic codes.
Military Computing: The Reality (Cont’d)

Harvard Mark I
(1944 Mechanical Artillery Tables)

Zuse Z3
(1941 Electromechanical Aircraft Design)

Colossus
(1944 Electromechanical Codebreaking (Lorentz Cipher))
Military Computing: The Reality (Cont’d)

ENIAC (1945)

- Performed 5000 calculations / sec; programmed by wiring.
The First Hydrogen Bomb: Ivy Mike (1952)
Military Computing: The Reality (Cont’d)

Semi-Automatic Ground Environment (SAGE)
Air Defense System
Military Computing: The Reality (Cont’d)

IBM AN/FSQ-7 (1955)

- Two dozen AN/FSQ-7 (at 250 tons apiece) used to implement SAGE.
- Was obsolete by early 1960s with advent of ICBMs.
Military Computing: The Reality (Cont’d)

NORAD Cheyenne Entrance

NORAD Cheyenne Control Room
Military Computing: The Reality (Cont’d)

Minuteman I (1962)

Cruise Missile (AGM-86 (1982))
Military Computing: The Reality (Cont’d)

Predator UAV (1995)
Battle Robot (2000+)

Key issue is degree of autonomy of weaponized robots.
Military Computing: The Reality (Cont’d)
Cyber-War

- With dramatic increase in use and interconnectedness of computer systems, as well as their use by the military, computer systems and networks are now targets.
- Though intelligence and defence initial focus, investigations into attack potential since 1990s.
- Facilitated by undetected and exploitable flaws in commercial and military software (*zerodays*).
- New activity ("Exploitation") is effectively peacetime attack.
Military Computing at the Movies:  
*Colossus: The Forbin Project* (1969)

- Based on 1966 novel by D.F. Jones.
- Focus on perils of military system autonomy.
- Uncommonly fair treatment of the military.
- Features famous NL actor in early movie role.
Ihnatko’s Law of Voice Recognition: A computer sufficiently advanced to allow real-time voice communication between itself and a human will nevertheless speak like a drunk who has just received a serious blow to the head.

- Andy Ihnatko (in Ebert (1994))

Oscilloscope Fantastic: Test instruments are used to display Lissajous figures, sine waves or other meaningless curves and lines to suggest that something mysteriously technical is happening in the laboratory.

- Charles Peklenk (in Ebert (1994))